

of the sciences in which they are interested. But its potentialities are not realised. Those of us who are most anxious for the spread of the application of mathematics and physics to the phenomena of astronomy, meteorology, and geophysics have thought that this opportunity could not properly be utilised by crowding together all the papers that deal with such subjects into one day, or possibly two days, so that they can be polished off with the rapidity of an oriental execution. In fact, the opportunity to be polished off is precisely not the opportunity that is wanted. There are some of us who think that a British Association week is not too long for the consideration of the subjects of which a year's abstracts occupy a volume of six hundred pages, and that, if we could extend the opportunity for the consideration of these questions from one or two days to a week, and let those members who are interested form a separate committee to develop and extend these subjects, the British Association, the country, and science would all gain thereby. I venture from this place, in the name of the advancement of science, to make an appeal for the favourable consideration of this suggestion. It is not based upon the depreciation, but upon the highest appreciation of the service which mathematics and physics have rendered, and can still render, to the observational sciences, and upon the well-tried principle that close family ties are strengthened, and not weakened, by making allowance for natural development.

The plea seems to me so natural, and the alternatives so detrimental to the advancement of science in this country, that I cannot believe the Association will turn to it a deaf ear.

NOTES.

WE deeply regret to have to announce the death, at the age of seventy-one, of M. E. E. Mascart.

WE much regret to have to record the death of the Earl of Rosse, F.R.S., which took place on Saturday last.

THE death is announced of Mr. F. Kynaston Barnes, formerly assistant constructor of the Navy and surveyor of dockyards. He was the author of many papers in the Transactions of the Institution of Naval Architects, joint author, with Prof. Rankin, of "Shipbuilding," and joint editor for a number of years, with Lord Brassey, of "The Naval Annual." Mr. Barnes, who at the time of his death was in his eighty-first year, was the inventor of the present method of calculating the stability of ships, which is known as "Barnes's method," and was the designer of the *Nile* and the *Trafalgar*.

THE death is announced of M. J. F. Nery Delgado, president of the Geological Survey of Portugal. M. Nery Delgado was also inspector-general of mines and a member of the Lisbon Royal Academy of Sciences.

THE death is announced of Mr. James D. Hague, the eminent American mining geologist, at the age of seventy-two. He became manager of the Lake Superior copper mines in 1863, and participated in the early development of the Calumet and Hecla mine. His most important work was his report on the mining industry of the fortieth parallel, published in 1870.

A CITIZENS' committee has been formed to arrange for the entertainment of the British Association in Canada next year, and various Western Governments and cities will be requested to cooperate. The programme, so far, provides for a trip through the west, and one through the mountains to the Pacific coast. Transportation facilities are being arranged, and a number of distinguished guests from Canada and the United States will be invited. Provision will also be made for a limited number of ladies.

ACCORDING to the *Times*, the Liverpool School of Tropical Medicine is making arrangements to send an

expedition to Jamaica to investigate tropical diseases there and the insect life of the island, which is responsible for carrying disease. It is intended to send Mr. Robert Newstead, the lecturer in economic entomology and parasitology of the Liverpool School of Tropical Medicine, in the first week of November to undertake the investigation of the ticks there responsible for certain diseases in animals, and of disease-bearing insects. It is possible that he may be accompanied by a medical research investigator, whose duties would be to investigate indigenous diseases of the island.

A REUTER message from Simla, dated August 28, states that the servant of Dr. Sven Hedin has reached Leh, Kashmir, reporting that the explorer was four marches from Gartok twenty-five days before, and was in good health. A message from the *Times* correspondent at Simla, dated August 31, reports that Dr. Sven Hedin is expected at Simla next week. A letter dated Gartok, August 1, is the first direct news heard from the explorer for several months.

It is stated in *Science* that the department of meridian astronomy of the Carnegie Institution, in charge of Prof. Lewis Boss, of the Dudley Observatory at Albany, N.Y., where the work of the department is carried on, is dispatching an expedition to the Argentine Republic to establish a branch observatory there. This observatory will be established at San Luis, about 500 miles west from Buenos Aires. This town, of about 10,000 inhabitants, is located near the eastern edge of the Andean plateau at an elevation of about 2500 feet. It is reported to have a fine climate with remarkably clear skies. The principal instrument will be the Olcott meridian circle of the Dudley Observatory, which will be set up in its new location for the purpose of making reciprocal observations upon stars already observed at Albany, together with observations upon all stars from south declination to the south pole that are brighter than the seventh magnitude, or which are included in Lacaille's survey of the southern stars made at the Cape of Good Hope in 1750. It is estimated that the work of observation in Argentina will last three or four years. The object of these observations is to gather material for facilitating the construction of a general catalogue of about 25,000 stars, in which will be contained accurately computed positions and motions of all the stars included in it.

ACCORDING to a Reuter message from Berlin, a wireless telegram has been received from the steamer *Kaiserin Auguste Victoria* stating that Dr. Polis, the director of the meteorological observatory at Aachen, is continuing his experiments in transmitting meteorological observations at sea between New York and England by means of wireless telegraphy. Dr. Polis is reported to have succeeded in receiving weather reports from America at a distance of 800 nautical miles from the American coast, while reports from Europe were picked up at a distance of 1200 nautical miles from the English coast. Daily weather charts were drawn up by using reports from passing ships, which indicated the state of the weather on the Atlantic Ocean over an extent of 800 nautical miles. A message sent on August 27 to the *Kaiserin Auguste Victoria* from Aachen, via Ireland, took three hours to reach the ship.

THE summary of the weather for the closing week of August issued by the Meteorological Office shows that the rainfall was everywhere largely in excess of the average, the total for the week exceeding 2 inches in several dis-

tracts, and amounting to 2.30 inches in the south-west of England. Over the western portion of the kingdom, as well as in the south of England, rain fell each day. The mean temperature was nowhere very different from the average, and notwithstanding the heavy rain there was a slight excess of bright sunshine. The aggregate rainfall for the summer, as comprised by the thirteen weeks ending August 29, was everywhere in defect of the average except in the south and north-west of England. In the east of Scotland, the north-east of England, the south of Ireland, and in the Channel Islands the deficiency of rain was more than 2 inches. The rainy days were also deficient, except in the north of Scotland, where there was a deficiency of bright sunshine, all other districts showing a larger amount of sunshine than usual. In London, June was the only summer month with a deficiency of rain, and the total excess for the three months is 0.6 inch, the aggregate measurement being 7.14 inches; the wettest month was July, with a rainfall measuring 3.42 inches.

MAJOR W. A. J. O'MEARA, R.E., C.M.G., has been appointed by the President of the Board of Trade an additional British delegate to the International Conference on Electrical Units and Standards, which is to meet in London on October 12 next.

PROF. C. O. WHITMAN, who has for the past twenty years been director of the Marine Biological Laboratory, Wood's Hole, Mass., has resigned that position, and the assistant director, Prof. F. R. Lillie, of the University of Chicago, has been elected in his stead.

At the celebration of the jubilee of the British Ornithologists' Union, which is to take place in London in December next, gold medals will be presented to each of the four original members—Dr. F. Du Cane Godman, F.R.S., Mr. P. S. Godman, Mr. W. H. Hudson, F.R.S., and Dr. P. L. Sclater, F.R.S.

HIS MAJESTY THE KING has accorded his patronage to the Royal Society of Medicine, and has intimated his intention to sign the roll of the society in the autumn. During the past three months the Society of Anaesthetists and the Society for the Study of Disease in Children have joined the Royal Society of Medicine as sections for the study of the subjects in which they are especially interested.

THE fifty-third annual exhibition of the Royal Photographic Society of Great Britain will be held in London from September 17 to October 24.

ACCORDING TO *Science*, the assistants of Prof. Navarro, of Genoa, have decided to endow a Navarro prize to be awarded for work in general pathology.

NOTICE is given by the council of the Royal Society of Arts that the next award of the Swiney prize (consisting of a cup of the value of 100l. and money to the same amount) will be awarded in January next. The award will be for a work on medical jurisprudence. Any person desiring to submit a work in competition, or to recommend any work for the consideration of the judges, should do so by letter, addressed to the secretary of the Royal Society of Arts.

THE New York Academy of Medicine offers a prize of 200l. for the best essay on "The Etiology, Pathology, and Treatment of the Diseases of the Kidney." The papers submitted must reach the academy on or before October 1, 1909.

THE Academy of Sciences of Stockholm has undertaken the publication of the scientific works of Swedenborg, and

vol. i. of the series, dealing with geology, and containing a number of Swedenborg's letters, has recently been issued. Vol. ii. will contain treatises on chemistry, physics, and mechanics, and vol. iii. treatises on cosmology. Four further volumes are planned, and will deal respectively with the brain and general physiology.

THE provisional programme of the Incorporated Institution of Automobile Engineers for the session 1908-9 has been issued, and comprises the following items:—On October 14 the presidential address by Mr. Dugald Clerk, on some problems of the motor-car; on November 11 a paper by Mr. B. Hopkinson, on a complete test of a modern petrol engine—power, thermal and mechanical efficiency, exhaust products at various powers and speeds; and on December 9 a paper entitled "How the Weight of the Motor-car is made up" will be read by Mr. Mervyn O'Gorman. The following papers and discussions have been arranged for the general meetings of the institution in 1909:—Mr. F. H. Royce, causes of wear in motor machinery; Mr. G. H. Baillie, carburettor experiments; Mr. Horatio Ballantyne, the chemistry of petrol; Mr. Bertram Blount, on specifying the quality of petrol; Mr. F. R. S. Bircham, the use of small internal combustion engines for marine work; Mr. L. A. Legros, transmission; Mr. E. H. Cozens-Hardy, motor cabs; Dr. W. Watson, F.R.S., petrol engine experiments; and a discussion on valve setting, introduced by Mr. Max R. Lawrence.

A RECENTLY issued consular report from Tahiti states that among the innovations in agriculture to which the soil of some of the uninhabited valley lands of Tahiti and of other neighbouring islands would be propitious is the planting of rubber, which, it is believed, would give excellent results. The variety which appears to be specially recommended for the valleys of Tahiti is the *Castilloa elastica*, which has been experimented upon on a small scale with such encouraging results that a local company has been floated for the purpose of planting rubber on an extensive scale.

A DESCRIPTIVE account of the new aeroplane of Mr. Henry Farman appears in *La Nature*, and is abstracted by the Paris correspondent of the *Times*. The apparatus differs entirely in construction from Mr. Farman's two previous machines. Instead of having double planes, connected by ties and stays, which are regarded as offering undue resistance to the air, the new machine has, on either side, three wing-like single planes, giving it the appearance which has suggested its name—the *Flying Fish*. The body, made of ash, has, indeed, the exact shape of a long and slender fish, tapering backwards with a gentle dropping curve. It is 46 feet long, square in section, and comes somewhat sharply to a point in front, where a plate of aluminium supports the shaft of the propeller. Its four members are connected by wooden ties and steel stays, producing a girder of perfect rigidity. The machine is mounted on two wheels placed well forward under the motor. The steel framework which carries these wheels, as well as that of a third wheel placed near the tail, is provided with strong spiral springs intended to reduce the shock of alighting on the ground. The six rectangular "wings" are fixed towards the head of the machine, and are each 8 feet 8½ inches long and 1 foot 3½ inches wide. They consist of wooden frames rising towards the extremity, slightly curved and tapering on the same lines as the body of the "fish" itself. They are covered by a double layer of thin fabric. The second plane on each side is placed somewhat lower than the first, and the third somewhat lower than the second. At

the tail are two similar but rather shorter planes, the hindmost of which is movable on its axis, and acts as a horizontal rudder for regulating the height of flight. At the end of all comes the vertical cellular rudder of direction. It is mounted on a pivot fixed in the solid wooden shoe, which terminates the body of the machine, and it is prolonged forward over the back of the "fish" for nearly half the total length by a triangular extension of the same material as the planes. The whole body is covered with material, but in front of the pilot's position sheets of mica take the place of the stuff, so that his view may not be obstructed. The total bearing surface is 24 square metres. A novelty has been introduced into the steering apparatus. The wheel, which resembles that of a motor-car, is mounted vertically and acts normally upon the vertical rudder of direction, but when moved horizontally it acts by means of a lever on the horizontal rudder. The *Flying Fish* is fitted with a new 35-horsepower motor, especially constructed by the Renault Company. This motor has eight cylinders, arranged in a V, is air cooled by two fans, and weighs 130 kilograms. There is an aluminium carburettor and a diminutive magneto. The motor is connected directly with the two-bladed propeller. The whole aëroplane, including the pilot, weighs 650 kilograms.

To the August number of the *Contemporary Review* Dr. Alfred Russel Wallace has contributed a fighting article on the present position of Darwinism, in which it is urged that neo-Lamarckism, the mutation theory of de Vries, and Mendelism in no wise affect the truth and stability of the natural-selection doctrine. Neo-Lamarckism is dismissed with the statement that since, according to Mr. W. L. Tower, there is no evidence "to show the inheritance of acquired somatic characters or their incorporation in the germ-plasm," the fundamental assumption of the theory is false. As regards the mutation-doctrine, it is pointed out that whereas sudden structural "jumps" are common among cultivated plants and domesticated animals, in wild nature they are exceedingly rare, and would inevitably be speedily swamped in the course of evolution. This implies the existence in cultivation and domestication of some "provocative" factor which is lacking, or latent, in nature, and this, again, strikes at the root of the Mendelian doctrine as explanatory of the origin of species. "The claims of the Mutationists and Mendelians," writes Dr. Wallace in unequivocal language, "as made by many of their ill-informed supporters, are ludicrous in their exaggeration and total misapprehension of the problem they profess to have solved." On the other hand, it is admitted by the critic that Mendelism may, and probably will, have a certain value in explaining the transmission of disease and other matters connected with heredity.

"THE Rate of Growth of the Reef-building Corals" forms the title of a small pamphlet, by Mr. F. Wood Jones, published by Messrs. John Bale, Sons and Danielsson, Ltd., of Oxford House, Great Titchfield Street. These notes, which were made during a fifteen months' residence on the Keeling-Cocos Atoll, claim to have put the evidence as to the rate of coral-growth in a more definite form than has hitherto been the case. It is pointed out that, in order to be of value, observations must extend over a long period, as corals are subject to great seasonal and individual variation in their rate of increase, while there is likewise great difference in this respect between the branching and the massive groups. On the average, it appears that branching corals grow about 3.7 inches in a twelve-month, while the massive species increase their diameter by about 1/37 of their original circumference in 100 days.

In other words, a coral 37 inches in diameter will measure 38 inches across in a little more than three months. An estimate of the rate of growth of the branching species made by Dr. Guppy is practically identical with the author's results.

THE nature and causes of dwarf faunas are discussed at some length by Prof. H. W. Shimer in the July issue of the *American Naturalist*. Instances are given of the occurrence of such dwarfed invertebrate aquatic faunas in several parts of the world, while extinct faunas of the same type are likewise noticed. The chief agency in their production seems to be variation of environment, such as a large infusion of fresh water into a more or less isolated sea. Two types of dwarf faunas occur, one in which the individuals of different species are smaller than the normal, and the other in which individuals are normal, but all the species are small owing to the weeding-out of the larger ones. Dwarfing may show itself by the premature development of senile features or by the retention of juvenile characteristics (owing to slow development) throughout life.

CAPTAIN STANLEY FLOWER, in a very interesting article published in the *Zoologist* for August, discusses the ordinary prices paid to dealers for various species of wild animals (inclusive of mammals, birds, and reptiles). The prices quoted are restricted to transactions which have taken place during the last dozen years, and are solely based on the author's personal experiences. The highest-priced animal mentioned in the list is the giraffe, which ten years ago could not be purchased for 1000*l.*, although its value has now fallen to 400*l.* or 500*l.* We believe, however, that equally high prices have been paid for rhinoceroses. On the other hand, for its size, the brown bear is one of the cheapest of all wild animals, a specimen having changed hands for 4*l.* We should like to know the estimated value of a living sea-otter.

A NOTE on the utilisation of the "khair" forests in eastern Bengal and Assam has been published as Forest Pamphlet No. 1 issued by the Government of India. The author, Mr. P. Singh, adduces evidence for disregarding the belief that the wood of the "khair" tree, *Acacia catechu*, is devoid of catechin when it grows in moist localities. He also indicates the methods for preparing the dye-material cutch and for extracting the catechin in the preparation of "katha" or "kath," a product that finds favour among the native population as a chewing substance.

At the meeting of the American Philosophical Society held at Philadelphia in April, Mr. J. W. Harshberger read a paper on the leaf structure of the sand-dune plants of Bermuda. On the upper beach *Cakile aequalis* is a characteristic plant, and *Ipomoea pes-caprae* is luxuriant. Associated with the latter on the dunes are *Scaevola Plumieri*, *Tournefortia gnaphalodes*, and *Juniperus bermudiana*. *Conocarpus erectus* and *Stenotaphrum americanum* also grow on the dune slopes. Various devices for preventing undue loss of water are described. *Sisyrinchium bermudianum* bears the stomata in deep cavities, in the leaves of *Lantana involucrata* they lie in depressions fringed with hairs; *Conocarpus* secretes gum in the cells, and *Borrichia arborescens* depends upon a dense covering of hairs. The paper is printed in the first quarterly number of this year's Proceedings.

THE fortieth volume of Engler's "Botanische Jahrbücher," beginning with a part published in May, 1907, was concluded with the fifth part, published in May last.

Two fascicles of the contributions to the flora of Africa are included in the volume, in which the most general article is a revision of the African genera and species of the order Flacourtiaceæ, that has been prepared by Dr. E. Gilg. A phytogeographical study based on an exploration of the mid-Amazon is presented by Mr. E. Ule. The expedition, primarily undertaken to obtain information with regard to rubber trees and their distribution, has yielded much botanical treasure, and the author gives an elaborate description of the floras of the various tributaries. In the pages of the "Beiblätter" will be found the proceedings of the Society of Systematic Botanists at their meetings in Hamburg (1906) and Dresden (1907). An important paper was read at the Dresden meeting by Prof. O. Drude on mapping methods in connection with botanical surveys. Colours are used for certain broad, distinctive formations, such as moors and swamps or coniferous forest; on these are superposed special signs and letter combinations indicative of plant associations.

UNDER the title of "Classification paléolithologique," the eminent French anthropologist, M. A. de Mortillet, publishes a pamphlet intended to provide a scheme for the seriation of early art from prehistoric times down to the age of Charlemagne. His plan of grouping is founded on typical specimens, the terminology being based on the names of those Continental sites at which the most characteristic examples have been discovered. The prehistoric period, or age of Stone, falls into three sub-groups:—Éolithique, including Thenaysien and Puy-cournien; Paléolithique, with its subdivisions, Chelléen, Acheuléen, Moustérien, Solutréen, and Magdalénien; Néolithique, confined to Robenhausien. Similarly, the protohistoric time divides itself into an age of Bronze and of Iron, the former represented by the Tziganien period subdivided into the Morgien and the Larnaudien. The age of Iron falls into three periods, Gaulois, Romain, and Mérovingien, the first divided into Hallstattien and Marnien, the second into Lugdunien and Champdolien, the third including Wabénien. Each period is illustrated by excellent drawings of typical specimens, with descriptions and details of provenance. The scheme will be of much use in classifying the objects of human art in Continental museums, to which the survey is largely confined.

Two important communications on the subject of stone implements appear in *Man* for July and August. In the earlier number the Rev. H. G. O. Kendall describes a collection of Neolithic microliths from Welwyn, in Hertfordshire, and other sites in the Quaternary gravels of Essex. Many of the specimens are carefully chipped, and were probably used as boring tools. Those at Welwyn were found at a depth of 12 feet in some thin layers of gravelly sand. They seem to be analogous to the so-called "pygmy" flints discovered by Mr. R. A. Gatty at Scunthorpe, in Lincolnshire, which were described in *Man* (February, 1902), and closely resemble specimens found by Mr. A. C. Carlisle in the Indian Vindhya range. In the August number of the same periodical Mr. C. G. Seligmann describes a collection of quartz implements from Ceylon, found in various parts of the island in sites varying from a height of a few hundred feet above sea-level to about 4000 feet. The range of their distribution indicates that at one time there must have been a considerable population using tools of this kind. They are found in places at present occupied by the Veddahs, and Mr. Seligmann accepts the view of the brothers Sarrasin that they may be attributed to this race. The caves in which they were discovered seem to have been seized by

the Sinhalese some two thousand years ago, when they expelled the Veddah occupants. In later days the Veddahs re-occupied these sites. These recent discoveries seem to indicate a closer connection between the two races than is usually realised.

THE report on the work of the Survey Department, Egypt, in 1907, shows that good progress is being made in the various branches of its useful and far-reaching operations. Among these are included, *inter alia*, (1) the topographical survey comprising the 1:10,000, 1:50,000, and 1:250,000 series of maps; (2) the cadastral survey, which prepares maps on large scales, showing property boundaries and the land registers which accompany them. These sheets are utilised for the production of maps on smaller scales, but since the country is changing very rapidly in parts, owing to perennial irrigation, barrage, and reclamation, the cadastral sheets have usually to be revised in the field. (3) The geological survey; Captain Lyons states that during the past ten seasons' work the general outline of the geological structure of the country has been laid down in considerable detail, and that a geological map of the country on the scale of 1:1,000,000 is now in hand. In addition, the department tests the gas and water supplies of Cairo, and analyses materials supplied to various departments to see if they are in conformity with specification; it also superintends the meteorological stations in Egypt and the Sudan, and the preparation of observations for publication. We notice several important additions to the meteorological work, *e.g.* the publication of daily synoptic charts for the Mediterranean and adjacent parts (to which we have before referred), the discussion and immediate utilisation of observations made in Cyprus (by arrangement with the Meteorological Committee), and the exploration of the upper air. Although the latter service was only begun in July, 1907, some very valuable results have already been obtained.

WE have received for notice eight further volumes of the water supply and irrigation papers issued by the Department of the United States Geological Survey. These relate to the geology and water resources of districts along the Mississippi and Hudson Bay, in California, north-west of the Pacific, Nebraska, and Beaver Valley, Utah. The information contained is comprehensive and useful locally, but there is nothing of a special character that calls for further notice here. The methods of gauging the streams and the instruments employed, which are described and illustrated, have been already dealt with in previous articles.

IN the July number of the *National Geographic Magazine* Mr. A. H. Sylvester, of the United States Geological Survey, gives an interesting account, illustrated by admirable photographs, of "our noblest volcano," Mount Hood, which rises to a height of 11,225 feet in the State of Oregon. It is an almost perfect volcanic cone, the fourth in height of the snow peaks of the Pacific North-West, being surpassed only by Rainier, Shasta, and Adams. It was built up of andesitic lavas which were ejected from a single summit crater. Recently the volcano has displayed signs of renewed activity. Prof. Russell, in his book on "American Volcanoes," gave a picture taken in 1882 of a so-called fumarole on the south slope, which has since that time apparently become inactive; but steam has recently been observed to issue from fissures on Crater Rock, and something resembling a glow was noticed at the same point in 1907. It is interesting to note that this activity was synchronous with changes observed in the Bogaslof group of volcanic islands off the Alaskan coast.

THE *Rivista Geografica Italiana*, No. 6 of 1908, contains a short note on the remarkable eruption of Etna on April 29 last. This was preceded by violent earthquakes, and accompanied by the opening of a fracture of more than a kilometre in length and from 20 to 50 metres in breadth. Several parasitic cones of small size were formed along it, and about 500,000 cubic metres of lava poured out, but the fissure was only partially obscured by erupted material, and remained conspicuous after the eruption had ceased. Although this eruption was violent while it lasted, and although the interval separating it from the next preceding eruption was more than fifteen years, or about two and a half times the average during the last 150 years, the eruption was of very short duration, commencing at 5.20 a.m. on April 29 and ceasing at 5.40 p.m. on April 30, but practically lasting for only about seventeen hours.

THE report of the Meteorological Committee for the year ending March 31 last contains much useful reading for those interested in the development of meteorological science, and shows that great efforts are being made both from practical and theoretical points of view. Many useful publications have been issued during the year, to some of which we have already referred; among those still in the press we may specially mention:—(1) meteorological results for the western portion of the Atlantic anticyclone, by Dr. R. H. Scott; (2) seasons in the British Isles since 1878; and (3) summary of hourly values at four observatories, 1879–1908. The most important point to be noted in connection with the periodical publications is the revision of the form of the monthly weather report, which gives summaries from all stations in connection with the office, either directly or through the meteorological societies and other bodies, and includes a rainfall map contributed by Dr. H. R. Mill. This change is based on the principle that the value of the observations is much enhanced by prompt publication, and now extends to all branches of the work; e.g. the marine department, under the able superintendence of Commander Hepworth, issues elaborate monthly pilot charts for the Atlantic and Indian Oceans, which include the latest intelligence of use to seamen received by cable from the Canadian and Indian Meteorological Services. In view of the importance of a homogeneous system of weather telegraphy in western Europe, the committee has changed the hour of reports from 8h. to 7h. a.m.; the additional expense of the earlier opening of the telegraph offices gives rise, however, to a serious question of ways and means. The use of wireless telegrams and the investigation of the upper air are among the many other important matters engaging the earnest attention of the committee.

THE June number of *Terrestrial Magnetism and Atmospheric Electricity* contains a short article on the work of the magnetic survey yacht *Galilee* from the pen of the director, Dr. L. A. Bauer. During the three years' voyages of the *Galilee* a complete magnetic survey of the Pacific Ocean was made with scarcely a hitch in the programme originally sketched out for it. The experience gained on board has led to the conclusion that for future work a vessel must be specially constructed, and the Carnegie Institution has undertaken to defray the cost of a new wooden sailing vessel, the *Carnegie*, 155 feet long, with auxiliary power (125 horse-power) provided by a gas engine, built, so far as possible, of non-magnetic materials, so that the outstanding magnetic effect of the ship will be less than the errors of observation. It is hoped that the ship will be ready next year, when a survey of the Atlantic will be commenced.

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In a further article in the same magazine Dr. Bauer points out that the recent attempts to represent the magnetic state of the earth by means of spherical harmonics have not led to results of which any practical use can be made, owing to the wide divergence between the calculated and the observed values for any point. This he puts down to the distribution of areas of irregularity of varied amounts and extents over the earth, and the difficulty of representing their effects analytically without calculating a prohibitive number of terms. He concludes that the time has come to halt in our attempts to calculate more terms, and to fix on a small number as representing the principal features of the magnetic state of the earth with sufficient accuracy, and to deal with each of the residuals separately.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN SEPTEMBER:—

- Sept. 7. Venus. Illuminated portion of disc = 0.431; 27th = 0.568.
 9. 7h. 56m. to 8h. 56m. Moon occults τ^2 Aquarii (mag. 4.3).
 10. 16h. 9m. to 16h. 56m. Moon occults 30 Piscium (mag. 4.7).
 11. 7h. 45m. Saturn in conjunction with Moon (Saturn $2^\circ 33' N.$).
 13. 11h. 42m. Minimum of Algol (β Persei).
 14. 9h. Venus at greatest elongation ($46^\circ 2' W.$).
 15. 13h. 37m. to 14h. 40m. Moon occults ϵ Tauri (mag. 3.7).
 „ Saturn. Outer minor axis of outer ring = $5''.32$.
 16. 8h. 31m. Minimum of Algol (β Persei).
 „ 16h. 12m. to 17h. 29m. Moon occults α Tauri (mag. 4.8).
 20. 19h. Venus in conjunction with Moon (Venus $5^\circ 0' S.$).
 22. 12h. 19m. Jupiter in conjunction with Moon (Jupiter $3^\circ 45' S.$).
 „ 22h. 59m. Sun enters Libra; Autumn commences.
 29. 19h. Saturn in opposition to the Sun.

OBSERVATION OF PHOEBE, SATURN'S NINTH SATELLITE.—From a note in No. 4270 of the *Astronomische Nachrichten* (p. 362, August 21) we learn that photographs of Saturn's ninth satellite, Phoebe, were obtained at Greenwich, with the 30-inch reflector, on July 31, August 1, 2, and 3. Provisional measures of the position-angle and distance of the satellite, about 63° and $39'$ respectively, are given for each date. On August 3 the satellite was at, or very near, eastern elongation, so that these positions, in combination with those determined at western elongation about October 30, 1907, will furnish valuable data for the determination of the mass of Saturn.

THE PARALLAX OF 61 CYGNI.—From meridian observations, made with the small meridian-circle of the Astronomical Institute of Heidelberg Observatory, Herr Giorgio Abetti has determined the parallax of the well-known double star 61 Cygni, and publishes a preliminary communication of his results in No. 4270 of the *Astronomische Nachrichten*. These preliminary results give a somewhat lower value than previous determinations, the respective parallaxes of the preceding and following components being $+0''.24 \pm 0''.05$ and $+0''.22 \pm 0''.05$.

PROMINENCES AT THE SUN'S POLES.—In No. 7, vol. xxxvii., of the *Memorie della Società degli Spettroscopisti Italiani* (p. 107) Father Fenyi discusses, at some length, the occurrence and appearance of large prominences near the solar poles. The discussion embraces the question as to the epoch of the sun-spot period at which such prominences are most frequently seen, and it is shown that their maximum takes place some months after the sun-spot maximum. Among other conclusions, Father Fenyi finds that there is a periodical sharp maximum to which it is desirable that further attention should be paid. He also shows that the estimation of the heliographic latitude of the sun's polar cap from the continuous observations of the positions of prominences in regard to the limb is not